

Form PTO-1550

P21437.P01

U.S. DEPARTMENT OF COMMERCE  
PATENT AND TRADEMARK OFFICE

ATTORNEY'S DOCKET NUMBER

P21437

TRANSMITTAL LETTER TO THE UNITED STATES  
DESIGNATED/ELECTED OFFICE (DO/EO/US)  
CONCERNING A FILING UNDER 35 U.S.C. 371

U.S. APPLICATION NO. (If known, see 37 CFR 1.5)

09/926279

INTERNATIONAL APPLICATION NO.

PCT/EP/00/02395

INTERNATIONAL FILING DATE

17 March 2000

PRIORITY DATE CLAIMED

08 April 1999

TITLE OF INVENTION

TEXTILE MESH STRUCTURE IN PARTICULAR, A GEOMESH

APPLICANT(S) FOR DO/EO/US

Ulrich Von FRANSECKY

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information.

1. ☒ This is a FIRST submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This is an express request to promptly begin national examination procedures (35 U.S.C. 371(f)).
4. ☒ The US has been elected by the expiration of 19 months from the priority date (PCT Article 31).
5. ☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
  - a. ☒ is attached hereto (required only if not communicated by the International Bureau).
  - b. ☒ has been communicated by the International Bureau.
  - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☒ An English language translation of the International Application as filed (35 U.S.C. 371 (c)(2)).
7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
  - a. ☐ are attached hereto (required only if not communicated by the International Bureau).
  - b. ☐ have been communicated by the International Bureau.
  - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
  - d. ☒ have not been made and will not be made.
8. ☐ An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).  
"UNEXECUTED"
10. ☒ An English language translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (U.S.C. 371(c)(5)).

**Items 11 to 16 below concern other document(s) or information included:**

11. Assignee: HUESKER SYNTHETIC GmbH & Co., of Gescher, GERMANY
12. ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
13. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
14. ☒ A FIRST preliminary amendment.  
☐ A SECOND or SUBSEQUENT preliminary amendment.
15. ☐ A substitute specification.
16. ☐ A change of power of attorney and/or address letter.
17. ☐ Figure of Drawing to be published \_\_\_\_\_
18. ☒ Other items or information:

International Application as published (in German).  
Cover Letter under 35 U.S.C. 371 and 37 C.F.R. 1.495.  
PCT/IB/308.  
PCT/IB/304.  
PCT/ISA/210 (in German & English).  
Claim of Priority.

U.S. APPLICATION NO. (If known, see 37 CFR 1.5) **09/926279**INTERNATIONAL APPLICATION NO.  
PCT/EP00/02395ATTORNEY'S DOCKET NUMBER  
P2143719. ☒ The following fees are submitted:

Basic National Fee (37 CFR 1.492(a)(1)-(5)):

Search report has been prepared by the EPO or JPO. . . . . \$ 890.00

International preliminary examination fee paid to USPTO (37 CFR 1.482). . . . . \$ 710.00

No international preliminary examination fee paid to USPTO (37 CFR 1.482) but  
international search fee paid to USPTO(37 CFR 1.445(a)(2)). . . . . \$ 740.00Neither international preliminary examination fee (37 CFR 1.482) nor  
international search fee (37 CFR 1.445(a)(2) paid to USPTO. . . . . \$1,040.00International preliminary examination fee paid to USPTO (37 CFR 1.482) and all  
claims satisfied provisions of PCT Article 33(2)-(4). . . . . \$ 100.00

ENTER APPROPRIATE BASIC FEE AMOUNT =

CALCULATIONS

PTO USE ONLY

\$ 890.00

Surcharge of \$130.00 for furnishing the oath or declaration later than \_\_\_ 20 \_\_\_ 30  
months from the earliest claimed priority date (37 CFR 1.492(e)).

\$ 0.00

Claims

Number Filed

Number Extra

RATE

\$ 0.00

Total Claims

7

- 20 =

0

X \$18.00

\$ 0.00

Independent Claims

1

- 3 =

0

X \$84.00

\$ 0.00

Multiple dependent claim(s) (if applicable)

+ \$280.00

\$ 0.00

TOTAL OF ABOVE CALCULATIONS =

\$ 890.00

Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above are reduced  
by 1/2.

\$ 0.00

SUBTOTAL =

890.00

Processing fee of \$130.00 for furnishing the English translation later than \_\_\_ 20 \_\_\_ 30  
months from the earliest claimed priority date (37 CFR 1.492(f)).

+

0.00

Extension of Time fee in the amount of \$

0.00

TOTAL NATIONAL FEE =

890.00

Fee for recording the enclosed assignment (37 CFR 1.21(h). The assignment must be  
accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property

+

0.00

TOTAL FEES ENCLOSED =

890.00

Amount to be  
refunded

\$

Charged

\$

a. ☒ A check in the amount of \$890.00 to cover the above fees is enclosed.

b. \_\_\_ Please charge my Deposit Account No. \_\_\_ in the amount of \$ \_\_\_ to cover the above fees.

c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to  
Deposit Account No. 19-0089.NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and  
granted to restore the application to pending status.SEND ALL CORRESPONDENCE TO CUSTOMER NO. 7055  
AT THE PRESENT ADDRESS OF:Neil F. Greenblum  
GREENBLUM & BERNSTEIN, P.L.C.  
1941 Roland Clarke Place  
Reston, VA 20191  
(703) 716-1191

007055

PATENT AND TRADEMARK OFFICE

SIGNATURE

Neil F. Greenblum  
NAME

28,394

REGISTRATION NUMBER

P21437.A01

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Ulrich Von FRANSECKY )  
 )  
Appln. No. : U.S. National Stage of )  
 PCT/EP00/02395 )  
 )  
Filed : March 17, 2000 )  
 )  
For : TEXTILE MESH STRUCTURE )  
 IN PARTICULAR, A GEOMESH )

**PRELIMINARY AMENDMENT**

Commissioner of Patents and Trademarks  
Washington, DC 20231

Sir :

Prior to the examination of the above-identified patent application, the Examiner is respectfully requested to amend the claims as follows:

**IN THE CLAIMS**

*Please amend the claims as follows (Marked-up copies of the amended claims are attached to the Appendix):*

3. (Amended) A mesh structure according to claim 1, characterized in that in the intersection region the lengths of the meshes (7') of the fixing threads (3) are so short that a mesh (7') is associated with each weft thread (2) of a weft thread group (11).

4. (Amended) A mesh structure according to claim 1, characterized in that associated with each warp thread (1) is a fixing thread (3) which embraces the warp thread

(1) in the form of warp meshes (7, 7').

5. (Amended) A mesh structure with warp thread groups (9) formed from at least two warp threads (1) extending in closely mutually juxtaposed relationship, according to claim 1, characterized in that the warp threads (1) of a warp thread group (9) are fixed to prevent lateral displacement by means of a joining thread (10) extending in a zig-zag configuration.

6. (Amended) A mesh structure according to claim 1, characterized in that the fixing threads (3) of a warp thread group (9), which are associated with each warp thread (1), are fixed to prevent lateral displacement by means of a joining thread (10) extending in a zig-zag configuration.

7. (Amended) A mesh structure according to claim 1, characterized in that the joining threads (10) or fixing threads (3) which are knitted on or applied by Raschel knitting join the warp and weft threads of the mesh to a non-woven material layer.

#### **REMARKS**

The Examiner is respectfully requested to enter the foregoing amendment prior to examination of the above-identified patent application.

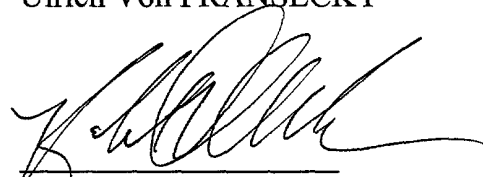
Applicant notes that the instant amendment is being submitted to address formal matters by eliminating multiply dependent claims. Accordingly, Applicant submits that the instant amendment has not been made for any purpose related to a statutory basis of

P21437.A01

patentability.

Should there be any questions, the Examiner is invited to contact the undersigned at the below listed number.

Respectfully submitted,  
Ulrich Von FRANSECKY

  
Neil F. Greenblum  
Reg. No. 28,394 *RF 35,043*

October 4, 2001  
GREENBLUM & BERNSTEIN, P.L.C.  
1941 Roland Clarke Place  
Reston, VA 20191  
(703) 716-1191

FOOT-62292660

**APPENDIX**

***Marked-Up Copies of the Amended Claims:***

3. (Amended) A mesh structure according to claim 1 [or claim 2], characterized in that in the intersection region the lengths of the meshes (7') of the fixing threads (3) are so short that a mesh (7') is associated with each weft thread (2) of a weft thread group (11).

4. (Amended) A mesh structure according to [one of claims 1 to 3] claim 1, characterized in that associated with each warp thread (1) is a fixing thread (3) which embraces the warp thread (1) in the form of warp meshes (7, 7').

5. (Amended) A mesh structure with warp thread groups (9) formed from at least two warp threads (1) extending in closely mutually juxtaposed relationship, according to claim 1 [or claim 2], characterized in that the warp threads (1) of a warp thread group (9) are fixed to prevent lateral displacement by means of a joining thread (10) extending in a zig-zag configuration.

6. (Amended) A mesh structure according to claim 1 [or claim 2], characterized in that the fixing threads (3) of a warp thread group (9), which are associated with each warp thread (1), are fixed to prevent lateral displacement by means of a joining thread (10) extending in a zig-zag configuration.

7. (Amended) A mesh structure according to [one of claims 1 to 6] claim 1, characterized in that the joining threads (10) or fixing threads (3) which are knitted on or applied by Raschel knitting join the warp and weft threads of the mesh to a non-woven

P21437.A01

material layer.

# Declaration and Power of Attorney For Utility or Design Patent Application

Erklärung für Patentanmeldungen zur Gebrauchseignung und Entwicklung  
mit Vollmacht

## German Language Declaration

Als nachstehend benannter Erfinder erkläre ich hiermit an Eides  
Statt:

daß mein Wohnsitz, meine Postanschrift und meine Staats-  
angehörigkeit den im nachstehenden nach meinem Namen  
aufgeführten Angaben entsprechen, daß ich nach bestem Wissen der  
ursprüngliche, erste und alleinige Erfinder (falls nachstehend nur ein  
Name angegeben ist) oder ein ursprünglicher, erster und Miterfinder  
(falls nachstehend mehrere Namen aufgeführt sind) des  
Gegenstandes bin, für den dieser Antrag gestellt wird und für den  
ein Patent für die Erfindung mit folgendem Titel beantragt wird:  
TEXTILE GITTERSTRUKTUR, INSBESONDERE GEOGITTER

deren Beschreibung hier beigelegt ist, es sei denn (in diesem Falle  
Zutreffendes bitte ankreuzen), diese Erfindung

☒ wurde angemeldet am 17 März 2000  
unter der US-Anmeldenummer \_\_\_\_\_  
und wurde am \_\_\_\_\_ abgeändert (falls zutreffend)  
oder  
unter der PCT internationalen Anmeldungsnummer  
PCT/EP00/02395  
und wurde am \_\_\_\_\_ abgeändert (falls zutreffend).

Ich bestätige hiermit, daß ich den Inhalt der oben angegebene Paten-  
tanmeldung, einschließlich der Ansprüche, die eventuell durch einen  
oben erwähnten Zusatzantrag abgeändert wurde, durchgesehen und  
verstanden habe.

Ich erkenne meine Pflicht zur Offenbarung jeglicher Informationen  
an, die zur Prüfung der Patentfähigkeit in Einklang mit Titel 37,  
Code of Federal Regulations, § 1.56 von Belang sind.

Ich beanspruche hiermit ausländische Prioritätsvorteile gemäß Title  
35, US-Code, § 119 (a)-(d), bzw. § 365(b) aller unten aufgeführten  
Auslandsanmeldungen für Patente oder Erfinderurkunden, oder §  
365(a) aller PCT internationalen Anmeldungen, welche wenigstens  
ein Land ausser den Vereinigten Staaten von Amerika benennen, und  
habe nachstehend durch ankreuzen sämtliche Auslandsanmeldungen  
für Patente bzw. Erfinderurkunden oder PCT internationale  
Anmeldungen angegeben, deren Anmeldetag dem der Anmeldung,  
für welche Priorität beansprucht wird, vorangeht.

Prior Foreign Applications  
Frühere ausländische Anmeldungen

<u>199 15 722.7</u>	<u>Germany</u>
(Number)	(Country)
(Nummer)	(Land)
_____	_____
(Number)	(Country)
(Nummer)	(Land)

<u>08/April/1999</u>
(Day/Month/Year Filed)
(Tag/Monat/Jahr der Anmeldung)
_____
(Day/Month/Year Filed)
(Tag/Monat/Jahr der Anmeldung)

Priority Claimed  
Prioritätsanspruch

<input checked="" type="checkbox"/>	<input type="checkbox"/>
Yes	No
Ja	Nein
<input type="checkbox"/>	<input type="checkbox"/>
Yes	No
Ja	Nein

☐ Zusätzliche einstweilige Anwendungsnummern sind im  
Prioritätsanhang aufgeführt.

☐ Additional foreign application numbers are listed  
on a supplemental priority sheet attached hereto.

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated  
below next to my name.

I believe I am the original, first and sole inventor (if only one  
name is listed below) or an original, first and joint inventor (if  
plural names are listed below) of the subject matter which is  
claimed and for which a patent is sought on the invention entitled

TEXTILE MESH STRUCTURE, IN PARTICULAR A  
GEOMESH

the specification of which is attached hereto unless the following  
box is checked:

☒ was filed on 17 March 2000 as  
United States Application Number \_\_\_\_\_  
and was amended on \_\_\_\_\_ (if applicable)  
or,  
PCT International Application Number PCT/EP00/02395  
and was amended on \_\_\_\_\_ (if applicable).

I hereby state that I have reviewed and understand the contents of  
the above identified specification, including the claims, as  
amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material  
to patentability as defined in Title 37, Code of Federal  
Regulations, §1.56.

I hereby claim foreign priority under Title 35, United States Code  
§119 (a-d) or §365(b) of any foreign application(s) for patent or  
inventor's certificate, or §365(a) of any PCT international  
application which designated at least one country other than the  
United States, listed below. I have also identified below, by  
checking the "No" box, any foreign application for patent or  
inventor's certificate, or of any PCT international application  
having a filing date before that of the application on which  
priority is claimed:

# German Language Utility or Design Patent Application Declaration

Ich beanspruche hiermit Prioritätsvorteile unter Title 35, US-Code, § 119(e) aller US-Hilfsanmeldungen wie unten aufgezählt.

(Application Number)  
(Aktenzeichen)

(Application Number)  
(Aktenzeichen)

(Application Number)  
(Aktenzeichen)

- ☐ Zusätzliche einstweilige Anordnungsnummern sind im ergänzenden Prioritätsanhang aufgeführt.

Ich beanspruche hiermit die mir unter Title 35, US-Code, § 120 zustehenden Vorteile aller unten aufgeführten US-Patentanmeldungen bzw. § 365(c) aller PCT internationalen Anmeldungen, welche die Vereinigten Staaten von Amerika benennen, und erkenne, insofern der Gegenstand eines jeden früheren Anspruchs dieser Patentanmeldung nicht in einer US-Patentanmeldung, bzw. PCT internationalen Anmeldung in in einer gemäß dem ersten Absatz von Title 35, US-Code, § 112 vorgeschriebenen Art und Weise offenbart wurde, meine Pflicht zur Offenbarung jeglicher Informationen an, die zur Prüfung der Patentfähigkeit in Einklang mit Title 37, Code of Federal Regulations, § 1.56 von Belang sind und die im Zeitraum zwischen dem Anmeldetag der früheren Patentanmeldung und dem nationalen oder im Rahmen des Vertrags über die Zusammenarbeit auf dem Gebiet des Patentwesens (PCT) gültigen internationalen Anmeldetags bekannt geworden sind.

(Application No.)  
(Aktenzeichen)

(Day/Month/Year Filed)  
(Tag/Monat/Jahr eingereicht)

(Application No.)  
(Aktenzeichen)

(Day/Month/Year Filed)  
(Tag/Monat/Jahr eingereicht)

- ☐ Zusätzliche USA oder internationale Anordnungsnummern sind im ergänzenden Prioritätsanhang aufgeführt.

Ich erkläre hiermit, daß alle in der vorliegenden Erklärung von mir gemachte Angaben nach bestem Wissen und Gewissen der Wahrheit entsprechen, und ferner daß ich diese eidesstattliche Erklärung in Kenntnis dessen ablege, daß wissentlich und vorsätzlich falsche Angaben oder dergleichen gemäß § 1001, Title 18 des US-Code strafbar sind und mit Geldstrafe und/oder Gefängnis bestraft werden können und daß derartige wissentlich und vorsätzlich falsche Angaben die Rechtswirksamkeit der vorliegenden Patentanmeldung oder eines aufgrund deren erteilten Patentes gefährden können.

Hiermit bevollmächtigt der Unterzeichnete den hierin genannten entweder USA-Anwalt oder Stellvertreter, in der Abwesenheit einer direkten Verständigung zwischen den USA-Anwalt oder Stellvertreter und dem Unterzeichneten Anweisungen, die der der Anmeldung betreffend dem Patent und Warenzeichen Amt zugestellt werden, von entweder seinem ausländischen Patentvertreter oder Stellvertreter der Gesellschaft anzunehmen und auszuführen. Sollte sich das Personal ändern, von dem Anweisungen angenommen werden mögen, dann wird der hierin genannte USA-Anwalt oder Stellvertreter entsprechend von dem Unterzeichneten benachrichtigt.

I hereby claim the benefit under Title 35, United States Code §119(e) of any United States provisional application(s) listed below.

(Day/Month/Year Filed)  
(Tag/Monat/Jahr der Anmeldung)

(Day/Month/Year Filed)  
(Tag/Monat/Jahr der Anmeldung)

(Day/Month/Year Filed)  
(Tag/Monat/Jahr der Anmeldung)

- ☐ Additional provisional application numbers are listed on a supplemental priority sheet attached hereto.

I hereby claim the benefit under Title 35, United States Code §120 of any United States application(s), or §365(c) of any PCT international application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT international application in the manner provided by the first paragraph of Title 35, United States Code §112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations §1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application.

(Status)  
(patentiert, schwebend, aufgegeben)  
(patented, pending, abandoned)

(Status)  
(patentiert, schwebend, aufgegeben)  
(patented, pending, abandoned)

- ☐ Additional U.S. or international application numbers are listed on a supplemental priority sheet attached hereto.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

The undersigned hereby authorizes the U.S. attorney or agent named herein to accept and follow instructions from either his foreign patent agent or corporate representative, if any, as to any action to be taken in the Patent and Trademark Office regarding this application without direct communication between the U.S. attorney or agent and the undersigned. In the event of a change in the persons from whom instructions may be taken, the U.S. attorney or agent named herein will be so notified by the undersigned.

# German Language Utility or Design Patent Application Declaration

**VERTRETUNGSVOLLMACHT:** Als benannter Erfinder beauftrage ich hiermit den sich mit der Kundennummer befassenden Patentanwalt (Patentanwälte) und/oder Patent-Agenten mit der Verfolgung der vorliegenden Patentanmeldung sowie mit der Abwicklung aller damit verbundenen Geschäfte vor dem Patent- und Warenzeichenamt und weise an, dass alle Korrespondenz mit dieser Kundennummer adressiert wird.

**POWER OF ATTORNEY:** As a named inventor, I hereby appoint the attorney(s) and/or agent(s) associated with the Customer Number provided below to prosecute this application and transact all business in the Patent and Trademark Office connected therewith, and direct that all correspondence be addressed to that Customer Number:

**KUNDENNUMMER 7055**

**CUSTOMER NUMBER 7055**

Die ernannten Patentanwälte sind zur Zeit:

Neil F. Greenblum Reg. No. 28,394  
Bruce H. Bernstein Reg. No. 29,027  
Arnold Turk Reg. No. 33,094  
James L. Rowland Reg. No. 32,674

The appointed attorneys presently include:

Stephen M. Roylance Reg. No. 31,296  
Leslie J. Paperner Reg. No. 33,329  
William Pieprz Reg. No. 33,630  
William E. Lyddane Reg. No. 41,568

Address: **Greenblum & Bernstein, P.L.C.**  
1941 Roland Clarke Place  
Reston, VA 20191

Telefongespräche bitte richten an:

Direct Telephone Calls to:

**Greenblum & Bernstein, P.L.C.**  
(703) 716-1191

Vor- und Nachname des einzigen oder ersten Erfinders:  
Ulrich VON FRANSECKY

Full name of sole or first inventor  
Ulrich VON FRANSECKY

Unterschrift des Erfinders

Datum

Inventor's signature

Date

Wohnsitz  
Bocholt, Deutschland

Residence  
Bocholt, Germany

Staatsangehörigkeit  
Deutschland

Citizenship  
Germany

Postanschrift  
Margeritenweg 22, D-46395 Bocholt, Deutschland

Post Office Address  
Margeritenweg 22, D-46395 Bocholt, Germany

Vor- und Nachname des zweiten Miterfinders (falls zutreffend)

Full name of second joint inventor, if any

Unterschrift des zweiten Erfinders

Datum

Second Inventor's Signature

Date

Wohnsitz

Residence

Staatsangehörigkeit

Citizenship

Postanschrift

Post Office Address

(Bitte entsprechende Informationen und Unterschriften im Falle von dritten und weiteren Miterfindern angeben).

(Supply similar information and signature for third and subsequent joint inventors).

P21437

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : U. FRANSECKY

Appl No. : Not Yet Assigned

PCT Branch

I.A. Filed : 17 March 2000

PCT/EP00/02395

For : TEXTILE MESH STRUCTURE IN PARTICULAR, A GEOMESH

**CLAIM OF PRIORITY**

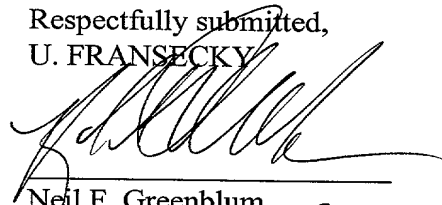
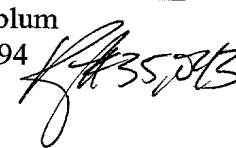
Commissioner of Patents and Trademarks

Washington, D.C. 20231

Sir:

Applicant hereby claims the right of priority granted pursuant to 35 U.S.C. 119 based upon German Application No. 199 15 722.7 filed 08 April 1999. The International Bureau already should have sent a certified copy of the German application to the United States designated office. If the certified copy has not arrived, please contact the undersigned.

Respectfully submitted,  
U. FRANSECKY

  
Neil F. Greenblum  
Reg. No. 28,394 

October 4, 2001  
GREENBLUM & BERNSTEIN, P.L.C.  
1941 Roland Clarke Place  
Reston, VA 20191  
(703) 716-1191

1090215233650

**Textile mesh structure, in particular a geomesh**

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[0001] The invention relates to a textile mesh structure, in particular a geomesh, comprising linearly extending warp threads and weft threads which extend linearly substantially at a right angle to the warp threads and which are joined to the warp threads by means of fixing threads which are applied by warp knitting and the meshes of which extend around the warp threads over the entire length and the weft threads in the region of the intersections, wherein the warp threads and the weft threads are arranged individually or in groups at relatively large spacings which produce the internal widths of the mesh.

[0002] Textile mesh structures of that kind are known from US patents Nos 4 472 086 and 4 540 311. The linearly extending and load-carrying warp threads and weft threads of the mesh preferably comprise high-module polyester yarns or other high-strength filament yarns, for example of polyamide. The fixing thread which is knitted onto the structure and which joins the warp threads to the weft threads in the form of knitted meshes or tricot meshes is considerably weaker in terms of its thread strength than the warp threads and the weft threads.

[0003] If necessary that mesh structure after manufacture thereof is encased with a soft plastic material, for example PVC, with a bitumen emulsion or with latex.

[0004] The object of the invention is to provide a better join between the warp threads and the weft threads without requiring additional fixing threads or stronger fixing threads.

[0005] In accordance with the invention that object is attained in that in the regions in which the weft threads cross the warp threads the lengths of the meshes of the fixing threads are markedly shorter than in the regions which are therebetween.

[0006] Advantageously, the length of the meshes of the fixing threads in the regions in which the weft threads cross the warp threads is at least 30% shorter than the length of the meshes between the intersection regions. That measure provides for a considerable saving in terms of fixing threads or fixing yarn without any fear of an adverse influence on the strength of the mesh structure. The manufacturing speed of those textile mesh structures is also increased.

[0007] Further features of the invention are set forth in the claims.

[0008] An embodiment of the invention is described in greater detail in the description hereinafter with reference to the drawings in which:

[0009] Figure 1 is a diagrammatic view of the textile mesh structure, in accordance with the invention,

[0010] Figure 2 is a view on an enlarged scale of a register round or repeat of the mesh structure from one side, and

[0011] Figure 3 is a view on an enlarged scale of a register round or repeat of the mesh structure from the other side.

[0012] The textile mesh structure shown in Figure 1 is composed of linearly extending warp threads 1 and weft threads 2 which extend at a right angle to the warp threads 1. Each three warp threads 1 are combined to form a respective warp thread group 9. In addition each two weft threads 2 are combined to form a respective weft thread group 11. The weft threads 2 are joined to the warp threads 1 by means of fixing threads 3 which are knitted thereon. The meshes of the fixing threads 3 extend in a zig-zag configuration over the warp threads 1. The warp thread groups 9 and the weft thread groups 11 are arranged at relatively large spacings which afford the internal widths 5 of the mesh 6.

[0013] In accordance with the invention, in the regions 4 in which the weft threads 2 cross the warp threads 1, the lengths 8' of the meshes 7' of the fixing threads 3 are markedly shorter than in the regions therebetween of the mesh structure.

[0014] As Figures 2 and 3 in particular show the lengths 8' of the meshes 7' or the threads loops of the fixing threads 3 in the regions 4 in which the weft threads 2 intersect the warp threads 1 are at least 30% and preferably 50% shorter than the lengths 8 of the meshes 7 between the intersection regions 4. In the intersection regions 4, a mesh 7' of the fixing threads 3 can be associated with each weft thread 2 per warp thread 1.

[0015] So that the warp threads 1 are secured to prevent lateral displacement thereof, a joining yarn 10 is applied by a Raschel knitting procedure, for holding the warp threads 1 of a warp thread group 9 together or securing them to prevent lateral displacement. That joining yarn 10 can either extend around the warp threads 1 of a warp thread group 9 in a zig-zag configuration or, as

shown in Figures 2 and 3, the fixing threads 3 of each warp thread group 9. It is however also possible for the warp threads 1 of a warp thread group 9 to be secured to prevent lateral displacement by the fixing threads 3 of a warp thread group 9 changing by tricot thread laying from one warp thread 1 of a warp thread group 9 to the adjacent warp thread 1 of the same warp thread group 9.

[0016] The textile mesh structure according to the invention can also be combined in known manner with a non-woven material layer.

## List of references

- 1 warp threads
- 2 weft threads
- 3 fixing threads
- 4 intersection region
- 5 internal width
- 6 mesh structure
- 7 mesh
- 7' mesh in the region of the intersection 4
- 8 length of the mesh 7
- 8' length of the mesh 7'
- 9 warp thread group
- 10 joining yarn
- 11 weft thread group

## Claims:

1. A textile mesh structure, in particular a geomesh, comprising linearly extending warp threads (1) and weft threads (2) which extend linearly substantially at a right angle to the warp threads (1) and which are joined to the warp threads (1) by means of fixing threads (3) which are applied by warp knitting and the meshes of which extend around the warp threads (1) over the entire length and the weft threads (2) in the region of the intersections (4), wherein the warp threads (1) and the weft threads (2) are arranged individually or in groups at relatively large spacings which produce the internal widths (5) of the mesh (6), characterized in that in the regions in which the weft threads (2) cross the warp threads (1) the lengths of the meshes (7) of the fixing threads (3) are markedly shorter than in the regions of the mesh structure, which are therebetween.

2. A mesh structure according to claim 1, characterized in that the lengths of the meshes (7') of the fixing threads (3) in the regions (4) in which the weft threads (2) cross the warp threads (1) are at least 50% shorter than the lengths of the meshes (7) between the intersection regions (4).

3. A mesh structure according to claim 1 or claim 2, characterized in that in the intersection region the lengths of the meshes (7') of the fixing threads (3) are so short that a mesh (7') is associated with each weft thread (2) of a weft thread group (11).

4. A mesh structure according to one of claims 1 to 3, characterized in that associated with each warp thread (1) is a fixing thread (3) which embraces the warp thread (1) in the form of warp meshes (7, 7').

5. A mesh structure with warp thread groups (9) formed from at least two warp threads (1) extending in closely mutually juxtaposed relationship, according to claim 1 or claim 2, characterized in that the warp threads (1) of a warp thread group (9) are fixed to prevent lateral displacement by means of a joining thread (10) extending in a zig-zag configuration.

6. A mesh structure according to claim 1 or claim 2, characterized in that the fixing threads (3) of a warp thread group (9), which are associated with each warp thread (1), are fixed to prevent lateral displacement by means of a joining thread (10) extending in a zig-zag configuration.

7. A mesh structure according to one of claims 1 to 6, characterized in that the joining threads (10) or fixing threads (3) which are knitted on or applied by Raschel knitting join the warp and weft threads of the mesh to a non-woven material layer.

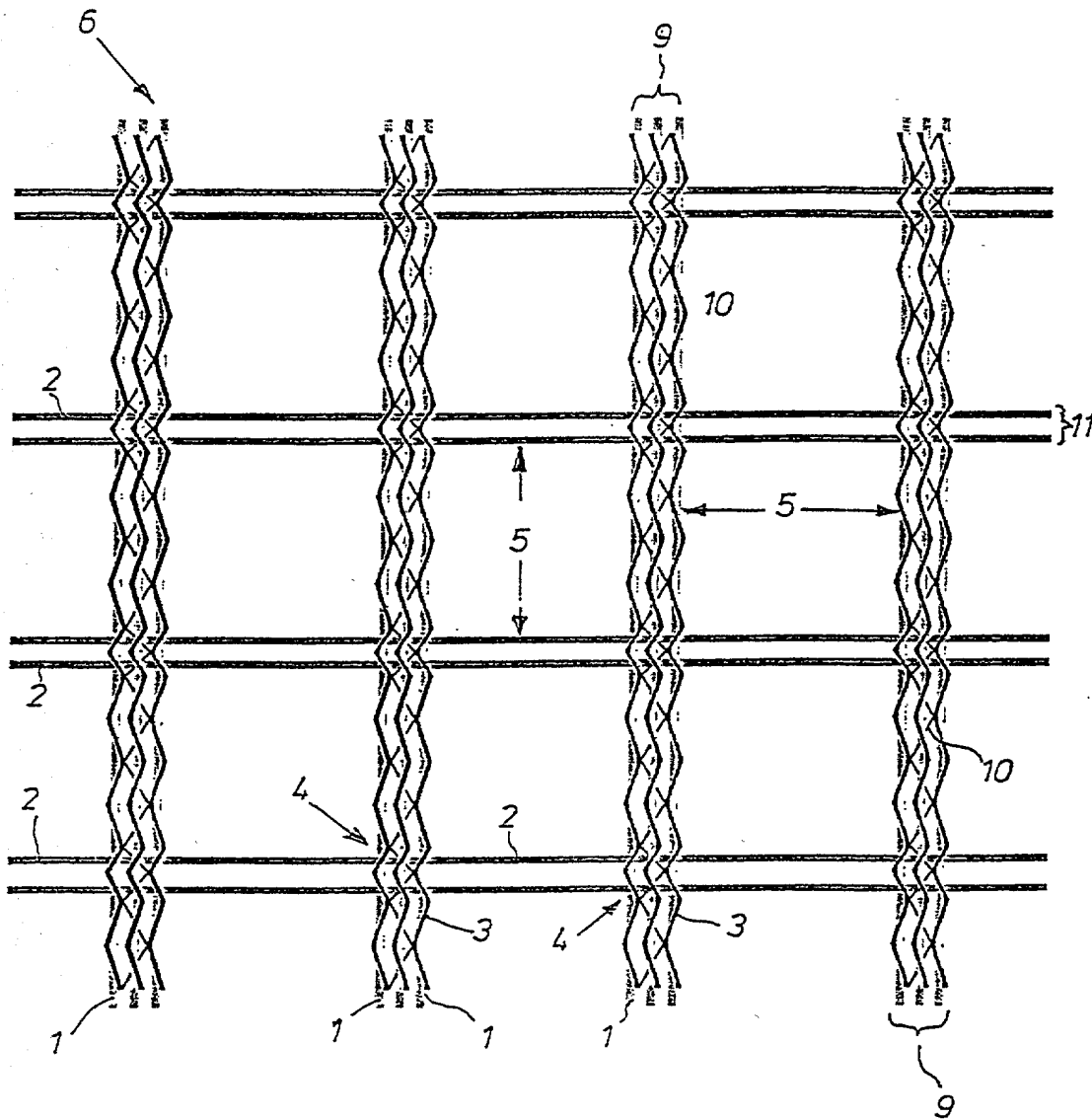


FIG. 1

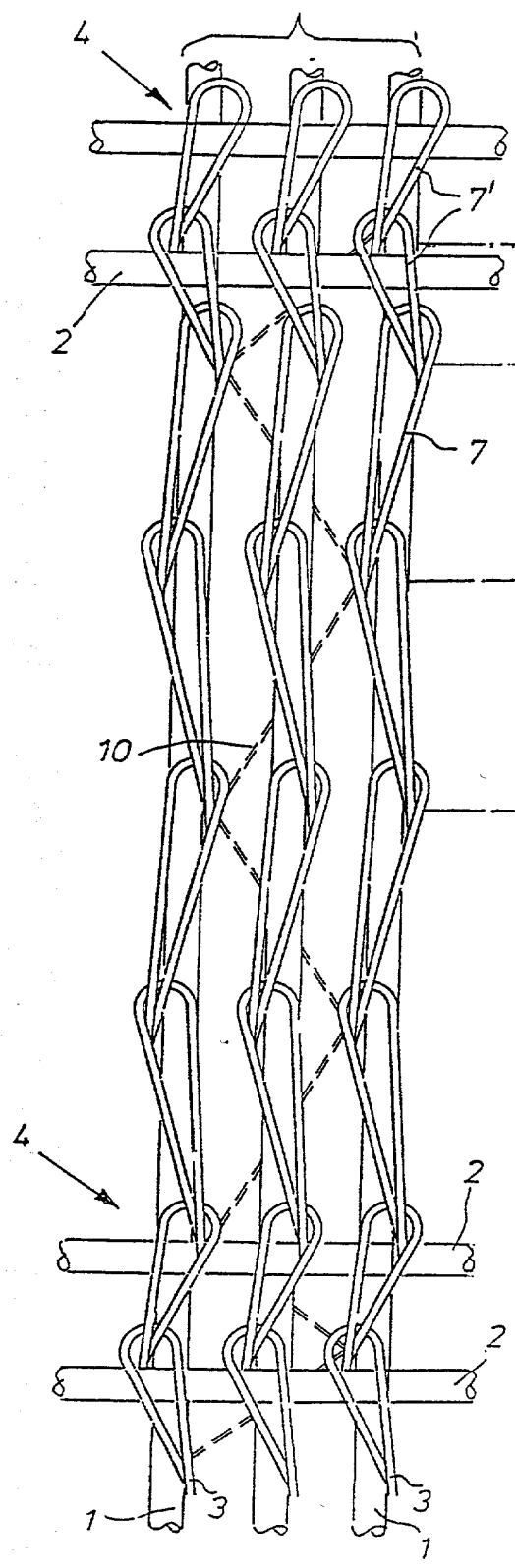


FIG. 2

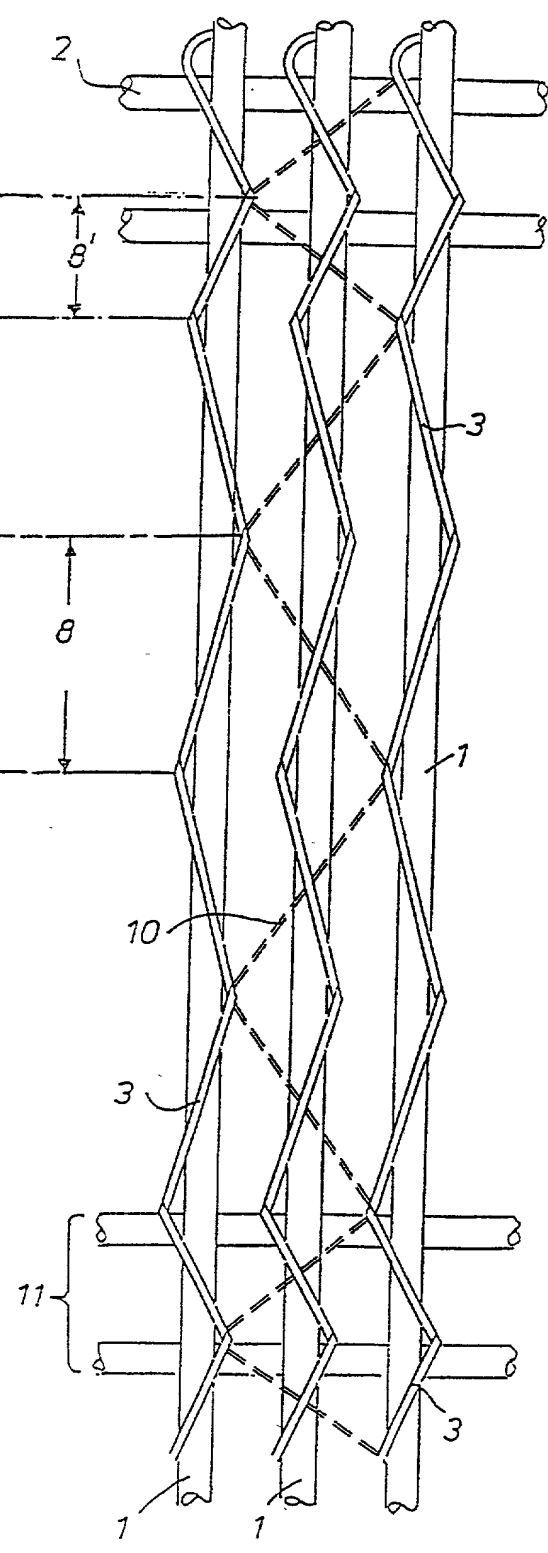


FIG. 3

# German Language Utility or Design Patent Application Declaration

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**KUNDENNUMMER 7055**

**CUSTOMER NUMBER 7055**

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Wohnsitz <b>Bocholt, Deutschland</b>		Residence <b>Bocholt, Germany</b>	
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Unterschrift des zweiten Erfinders	Datum	Second Inventor's Signature	Date
Wohnsitz		Residence	
Staatsangehörigkeit		Citizenship	
Postanschrift		Post Office Address	
(Bitte entsprechende Informationen und Unterschriften im Falle von dritten und weiteren Miterfindern angeben).		(Supply similar information and signature for third and subsequent joint inventors).	

# Declaration and Power of Attorney For Utility or Design Patent Application

## Erklärung für Patentanmeldungen zur Gebrauchseignung und Entwicklung mit Vollmacht

### German Language Declaration

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**TEXTILE GITTERSTRUKTUR, INSBESONDERE GEOGITTER**

deren Beschreibung hier beigelegt ist, es sei denn (in diesem Falle Zutreffendes bitte ankreuzen), diese Erfindung

- ☐ wurde angemeldet am 17 März 2000  
unter der US-Anmeldenummer \_\_\_\_\_  
und wurde am \_\_\_\_\_ abgeändert (falls zutreffend)  
oder  
unter der PCT internationalen Anmeldungsnummer  
PCT/EP00/02395  
und wurde am \_\_\_\_\_ abgeändert (falls zutreffend).

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#### Prior Foreign Applications

Frühere ausländische Anmeldungen

<u>199 13 722.7</u>	<u>Germany</u>
(Number)	(Country)
(Nummer)	(Land)
_____	_____
(Number)	(Country)
(Nummer)	(Land)

<u>08/April/1999</u>
(Day/Month/Year Filed)
(Tag/Monat/Jahr der Anmeldung)
_____
(Day/Month/Year Filed)
(Tag/Monat/Jahr der Anmeldung)

#### Priority Claimed

Prioritätsanspruch

<input checked="" type="checkbox"/>	<input type="checkbox"/>
Yes	No
Ja	Nein
<input type="checkbox"/>	<input type="checkbox"/>
Yes	No
Ja	Nein

☐ Zusätzliche einstweilige Anwendungsnummern sind im Prioritätsanhang aufgeführt.

☐ Additional foreign application numbers are listed on a supplemental priority sheet attached hereto

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

**TEXTILE MESH STRUCTURE, IN PARTICULAR A GEOMESH**

the specification of which is attached hereto unless the following box is checked:

- ☒ was filed on 17 March 2000 as  
United States Application Number \_\_\_\_\_  
and was amended on \_\_\_\_\_ (if applicable)  
or,

PCT International Application Number PCT/EP00/02395  
and was amended on \_\_\_\_\_ (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56.

I hereby claim foreign priority under Title 35, United States Code § 119 (a-d) or § 365(b) of any foreign application(s) for patent or inventor's certificate, or § 365(a) of any PCT international application which designated at least one country other than the United States, listed below. I have also identified below, by checking the "No" box, any foreign application for patent or inventor's certificate, or of any PCT international application having a filing date before that of the application on which priority is claimed:

# German Language Utility or Design Patent Application Declaration

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(Application Number)  
(Aktenzeichen)

(Application Number)  
(Aktenzeichen)

(Application Number)  
(Aktenzeichen)

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(Day/Month/Year Filed)  
(Tag/Monat/Jahr eingereicht)

(Application No.)  
(Aktenzeichen)

(Day/Month/Year Filed)  
(Tag/Monat/Jahr eingereicht)

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(Day/Month/Year Filed)  
(Tag/Monat/Jahr der Anmeldung)

(Day/Month/Year Filed)  
(Tag/Monat/Jahr der Anmeldung)

(Day/Month/Year Filed)  
(Tag/Monat/Jahr der Anmeldung)

- ☐ Additional provisional application numbers are listed on a supplemental priority sheet attached hereto.

I hereby claim the benefit under Title 35, United States Code § 120 of any United States application(s), or § 365(c) of any PCT international application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT international application in the manner provided by the first paragraph of Title 35, United States Code § 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations § 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application.

(Status)  
(patentiert, schwebend, aufgegeben)  
(patented, pending, abandoned)

(Status)  
(patentiert, schwebend, aufgegeben)  
(patented, pending, abandoned)

- ☐ Additional U.S. or international application numbers are listed on a supplemental priority sheet attached hereto.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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